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October 29.

Dr. C. Newlin Peirce in the Chair.

Ninety-one persons present.

A paper entitled, "Synopsis of the North American Species of Gorytes Latr," by Wm. J. Fox, was presented for publication.

The death of Louis A. Harlow, M. D., a member, was announced.

The Publication Committee reported in favor of the publication of the following papers in the Journal of the Academy:

"Certain River-mounds of Duval County, Florida." By Clarence B. Moore.

"Two Mounds on Murphy Island, Florida." By Clarence B. Moore.

"Certain Sand Mounds of the Ocklawaha River, Florida." By Clarence B. Moore.

A preliminary account of the Re-exploration in 1894 and 1895 of the "Bone Hole," now known as Irwins' Cave, at Port Kennedy, Montgomery County, Pennsylvania. Mr. Henry C. Mercer remarked that when Dr. Samuel G. Dixon of the Academy kindly put him in charge of the excavation at Port Kennedy in November of last year, (after Mr. D. N. McCadden, having found fossils in a dump heap, had called attention to the deposit, and after Mr. S. N. Rhoads had excavated there for some time) he, the speaker, soon learned that they were once more at the old so-called "Bone Hole" of Port Kennedy. This was the place referred to by Mr. C. M. Wheatley, who gives a cut of it in the American Journal of Science and Arts for April, 1871, and where he collected the bones described by Prof. Cope in the Proceedings of the American Philosophical Society for April, 1871. A recent lowering of the quarry floor had brought the workmen to the same soft place that they had reached twenty-five years before. They were twelve feet deeper than Mr. Wheatley had been at the previous time, in a gallery filled up with stratified rubbish, whose roof, if it had a roof, had been blasted away, whose bottom had never been reached and whose horizontal extent no one can guess. They were not standing in the darkness under a rock arch, but in the open quarry, forty-five feet below the original surface of the hill, at the very bottom of the quarried area, and below its water level, so deep that the drainage hole close by had to be pumped out day and night to keep the floor dry. A great mass of red talus, unfortunately dumped exactly upon the deposit, overhung them ready to fall as the digging went on.

The explorer was confronted by a vertical bank about twenty-five feet wide by twelve feet high and striped with colored bands of stratification and it was the great number and variety of the bones of animals that protruded from it in all directions that first astonished him. The bones lay in the red clay and black earth with fragments of limestone and bits of shale, broken, crushed, ground into a sort of meal, or flattened by the down-settling of the earth, often oozing full of water like a soaked sponge, and falling to pieces when touched, so that they had to be cased in shells of plaster of paris, to be removed. All that was seen was scattered and dislocated; no skeleton lay together, nor had the marks of gnawing teeth been found upon any of the bones to indicate a den of carnivorous beasts, while the kind and proportion of the remains further dispel the latter idea. The country, which for this reason they might infer was thickly wooded, must have been thickly inhabited by sloths, judging from the astonishing number of their bones, and as inferentially from modern species neither this animal nor the tapir, buried with it, endured cold, the climate was probably warm or temperate. Animals large and small, fierce and gentle, lay together, the cumbrous mastodon whose bones had been ground to powder, or dislocated and crushed, at the bottom of the digging along with the rabbit and the turtle. Professor Cope had shown that there were feline carnivores and abundant bears, and they had found the saber-toothed tiger with the bones of birds and the remains of the gentler horse, the beaver, and the llama. What was the power that destroyed the creatures, and what the event that brought toegther their bones and buried them in one place?

Not to anticipate a description that ought to be very carefully given of the position and contents of this remarkable deposit, of the way the jaws and the teeth, the knuckles and the vertebræ of these inhabitants of land and water, earth and air lay together, of the relation of all the bones to the stratified bands of clay and stones, and of the position of the whole with reference to the surface of the hill, and to the other galleries and chambers that had been continually revealed by blasting, let it be said, that every blow of the pick-axe, destroying as much as it saved in the thick mass, revealed the action of water, which, it seems, must have overswept the hill-top since it could not have crept up to do its work by seeking its level through a longer ingress, and which, for other reasons to be explained, must have worked upon a large scale. Was it an immense rising of the river swollen by the down-washing from the glacier? Was it a wider sinking of the whole eastern continental floor when the sea invaded the land during the Champlain period? If so, where were the marine shells, which thus far the speaker had failed to find? Was it a gradual thing or a sudden and terrible catastrophe, driving together beasts forgetful for the time of their animosities, toward some common refuge. He might refer the carbonizing of the wood to vegetable decomposition; should he appeal to the action of ice to account for great thick blocks of wood, still undecomposed, cut out of trees, and though rubbed and rounded in an inexplicable manner, still retaining their bark? Aware that he was probably dealing with a situation such as had never before been presented in the seaboard region, and not certain what might be disclosed at any moment, he had taken the most minute care of all the bones that could be saved, labelling everything at once, according to a system of numbered rectangles painted on the deposit with white-wash so that the exact relative position of each specimen could be recorded and a chart made, if need be, to show the whole series in place at a glance.

Here was an immense deal of evidence sealed up, every item of which should offer an important clue to the conditions of pleistocene time. The matrixes sent in bulk in boxes, because they contained too many small remains to be opened at the cave, should be studied by a botanist. There were parts of trees, twigs, and possibly grasses, leaves, vines, fibres, nuts and seeds, all as clearly a part of the time and its climate as the animals.

Several suppositions were necessary to account for what was seen:

First. This diverse and uncongenial horde of animals must have come together, whether to eat salt, feed, drink, cross a swamp and perish in the mire, fall into a hole, or to take refuge at some point of vantage from some terror of nature.

Second. They perished, but how? Should the entombment be referred to wholesale destruction by lightning, carcasses dragged into an open cavern by carnivores, or numbers of animals going to one spot to die? If it was drowning on a large scale, how account for the birds and the turtles?

Third. The flesh decomposing had left the bones, and the bones themselves had decayed in many instances before they were redeposited in the cave. This was certain from the fact that no skeletons lay intact.

Fourth. Water had redeposited the already fleshless and weakened bones in their present position, grinding many of the older and more fragile into a sort of meal, imbedding others comparatively intact in this meal, depositing all in hopeless confusion with clay and stones in stratified bands, and destroying them still farther by the down-settling of the debris after they had reached their present position.

There seemed to be no mixing of epochs or down-washing of old and new deposits into this deep chasm. Whatever else was inferred from the debris they knew its geological date. They had gone back one geological step, into different conditions of species, and a different climate. If they were to find a paleolithic ape-like savage in eastern North America this was the place to settle his antiquity beyond all reasonable doubt. No trace of humanity had yet been found, but if Man were living at this time they might suppose that the waters which gathered together and poured into this tomb so many living creatures seized him also, and that at some unexpected moment, they should find a piece of his skeleton, or a fragment of his handiwork to prove it. Port Kennedy represented the meeting ground between anthropology and paleontology, where perhaps from the point of view of the latter larger science, it was sufficient to gather the bones, and identify the species, but anthropology asked for more. It must have everything measured and in place. On the alert for the sudden apparition of Man, it must know how, when, why, by whom, and under what circumstances all these objects were found. No more of the doubt that beclouded the classic deposits at Natchez, Miss., or Trenton, N. J., that perplexed the student who went to Stockholm and tried to get at the real meaning of the bones that Lund supposed he found associated with pleistocene fossils in the Minas-Geraes Caverns in Brazil. No more of the uncertainty.that obscured at first the investigations at Gailenreuth, where pottery and charcoal seemed to be mixed with the bones of the Cave Bear, or at other caverns in Belgium, England and France, where for a long time science concerned itself with the species of animals found, and not with the human remains associated with them. If *Homo sapiens* were found at Port Kennedy the fact and its significance could well be established beyond all controversy, but since Dr. Dixon and the speaker had begun excavation there a year ago, and after working at the spot for more than a month last autumn, and during several recent weeks, .the latter felt that it would be safe to say that not one-third of the deposit had been removed, though he himself had dug out about 300 cubic yards, and Mr. Rhoads had removed as much previously.

Thanks were due to Mr. Archibald Irwin, the owner of the quarry, for the privilege accorded by him of exploring the deposit. With his co-operation the work advanced. Meanwhile it was eminently desirable that means should be furnished for the farther exploration of this most important pleistocene record.

The Fossil Vertebrata from the fissure at Port Kennedy, Pa. PROF. EDW. D. COPE made the following remarks on the contents of the cave at Port Kennedy, and especially on the fossil remains of vertebrata presented to the Academy by Dr. S. G. Dixon and Mr. H. C. Mercer. The fissure was exposed in 1870 by the workmen engaged in quarrying the Cambrian limestone (Calciferous epoch), and Mr. C. M. Wheatley had published an account of it in the American Journal of Science and Arts. He collected numerous fossils, which were the subject of a paper by the speaker, which was published in the Proceedings of the American Philosophical Society